



IRECO INCORPORATED
LEHI PLANT, SITE A
EPA I.D. NO. UTD070546445
CLOSURE PLAN

REVISED 11 JULY 1988

1.0 Introduction.

The IRECO Incorporated Lehi Plant, Pelican Point, Site A (EPA I.D. No. UTD070546445) operates an on-site burning ground for the open burning of explosive wastes pursuant to Part 7.23.6 of the Utah Hazardous Waste Management Rules (HWMR). This is an interim status facility and is regulated by the requirements of Subpart B of the Utah HWMR.

The decision has been made to close the burning ground at Site A. Explosive wastes that are generated after the closure of the Site A burning ground will be shipped to IRECO's Lehi Plant, Site B (EPA I.D. No. UTD009089277), for open burning. The Site A plant will remain a generator that stores hazardous waste on-site for less than 90 days.

This Plan establishes the steps for closure of the Site A burning ground and is submitted in accordance with the requirements of Utah HWMR 7.14.

2.0 Plant Operations.

The Site A facility is employed for the manufacture of high explosive products. The products manufactured there are composed of the high explosive ingredients trinitrotoluene (TNT), cyclotrimethylene trinitramine (RDX), pentaerythritol tetranitrate (PETN) and mixtures thereof. Hazardous wastes generated from the processing of these materials have consisted of waste explosives, which exhibit the characteristic of reactivity (D003). Also included are

potentially reactive sludges (K044) generated from washdown of the production facilities.

3.0 Burning Ground.

Reactive wastes generated on-site have been treated by open burning pursuant to Utah HWMR 7.23.6. The location of the burning ground is shown in Figure A, attached. The actual quantity of explosives burned at one time has been limited to 20 lbs. Supplementary fuels (wood, paper, fuel oil, etc.) have been employed to assure complete combustion of the waste explosives.

The ash and residue left after the open burning of explosive wastes are a mixture of solid waste (ash and other nonhazardous residue formed by the burning of supplementary fuels) and a residue from the burning of the explosive wastes (reactive wastes D003 and K044). The resulting mixture is not a hazardous waste (see UHWMR 2.1.2(a)(2)(ii)) unless it exhibits one or more characteristics of a hazardous waste identified in Part 2.1.7 of the Utah HWMR. Past experience indicates that these residues are not hazardous. The sampling and testing described in Section 7.0 will be used to verify that residues left on-site are nonhazardous.

4.0 Closure Performance Standard.

The burning ground will be closed in accordance with the requirements of Part 7.14 of the Utah HWMR. Closure will be carried out so as to minimize the need for further

maintenance, and controls and to minimize or eliminate, to the extent necessary to protect human health and the environment, post-closure escape of hazardous waste, hazardous waste constituents, leachate, contaminated rainfall or waste decomposition products to the groundwater, or surface waters, or the atmosphere.

The Closure Plan is based on clean closure (that is, only nonhazardous residues remain) and all indications are that such closure is economically and technically feasible.

5.0 Closure Steps.

5.1 The maximum inventory of wastes in storage at any time during the life of the facility is estimated to have been 200 lbs. The maximum quantity of wastes treated at any one time is estimated to have been 20 lbs. The last burning will be completed within one month after approval of the Closure Plan.

5.2 Closure activities at the burning ground will be completed within 180 days after approval of this plan. (See Section 8.0 for milestone dates.)

5.2.1 The first step in implementing the Closure Plan is to visually inspect the burning ground for the presence of unburned wastes, reburn if necessary, and then sample and test the residues for RDX, TNT, PETN and reactivity. (See Section 7.0, "Sampling and Testing.")

5.2.2 If the residues are reactive and/or contain more than one-tenth of a percent combined total of RDX, TNT and PETN, additional burning (utilizing wood, paper and oil as supplementary fuels) will be performed until all of the hazardous waste material is consumed and the residues are found to be nonreactive and contain less than one-tenth percent RDX, TNT and PETN. (See Reactivity of Explosives/Sediment Mixtures Technical Report ARLCD-TR-82007, U.S. Army Toxic and Hazardous Materials Agency, DRXTH-TE-D, Aberdeen Proving Ground, MD; Testing to Determine Relationship Between Explosive Contaminated Sludge Components and Reactivity, U.S. Army Toxic and Hazardous Materials Agency, January 1987, AMXTH-TE-CR-86096.)

5.2.3 All tools and containers that have come in contact with explosive wastes shall be decontaminated by burning.

5.2.4 The requirements of Part 7.14.2 will be met by assuring clean closure. Closure will be considered complete when the residues no longer exhibit the characteristic of reactivity and contain less than one-tenth percent RDX, TNT and PETN.

5.2.5 Certification will be provided by the owner, operator and an independent professional engineer that the facility has been closed in accordance with the approved plan.

6.0 Post-Closure.

Post-closure care is not required for nondisposal facilities, that is, for facilities where no hazardous wastes remain. We intend to demonstrate that no hazardous wastes remain upon closure and that no post-closure care is required as per Part 7.14.1 of the Utah HWMR.

7.0 Sampling and Testing Methods. (See Figure B)

7.1 Sampling Equipment. Core samples of the waste residues down to the underlying soil will be taken using a trier as per SW-846, 2nd edition, Section 1.2.1.5.

7.2 Sampling Strategies. For purposes of sampling, the burning ground will be divided into four sections. Four random samples will be taken in each section. The samples for each section will be composited prior to testing. A minimum of 10 lbs. of samples from each section will be required. In addition to the composite samples (random sampling), one authoritative sampling will be made in the area where the waste residues appear to be most concentrated.

7.3 Chain of Custody Procedures. (See Figure C)

7.3.1 A field book will be used to record field measurements and exact location of random and authoritative samples.

7.3.2 A sample chain of custody form shall contain the following information:

samples numbers
date and time
source of sample
analysis required
name of person taking sample
name of person transporting sample
name of person testing sample

There should be sufficient space to allow each person who has possession of the sample to sign the tag and record the date and time.

7.3.3 The tag should be affixed to the container immediately after sampling. The container should be sealed with tamperproof awareness tape. The wire or string used to attach the tag should be sealed with the tamperproof awareness tape also.

7.4 Sample Parameters. Reactivity, RDX, TNT and PETN.

7.5 Reactivity Sample Preparation. The samples will be air-dried prior to testing. Twenty-four hours exposure to low humidity, temperature between 65-80°F, will suffice if the sample depth in the drying tray is maintained at less than one inch.

7.6 Reactivity Test Methods. Residues will be tested for the characteristic of reactivity. For testing, ten pounds of the residue will be packed in a 4" diameter tube and initiation will be attempted with a 10 gram booster. We will attempt to initiate the residue with a high explosive 10 gram booster initiated by a #8 blasting cap. If the sample detonates, it will be considered to be a hazardous waste. Detonation will be considered to have occurred if a piece of detonating cord (witness cord) placed in the far end (away from booster) detonates.

7.7 RDX, TNT and PETN Test Method. The analytical work for RDX, TNT and PETN will be performed by IRECO Incorporated, West Jordan research laboratory. The test method will be high performance liquid chromatography (HPLC), using a reverse phase column, and acetonitrile eluent. The detection limit for the compounds in question is less than 50 parts per million.

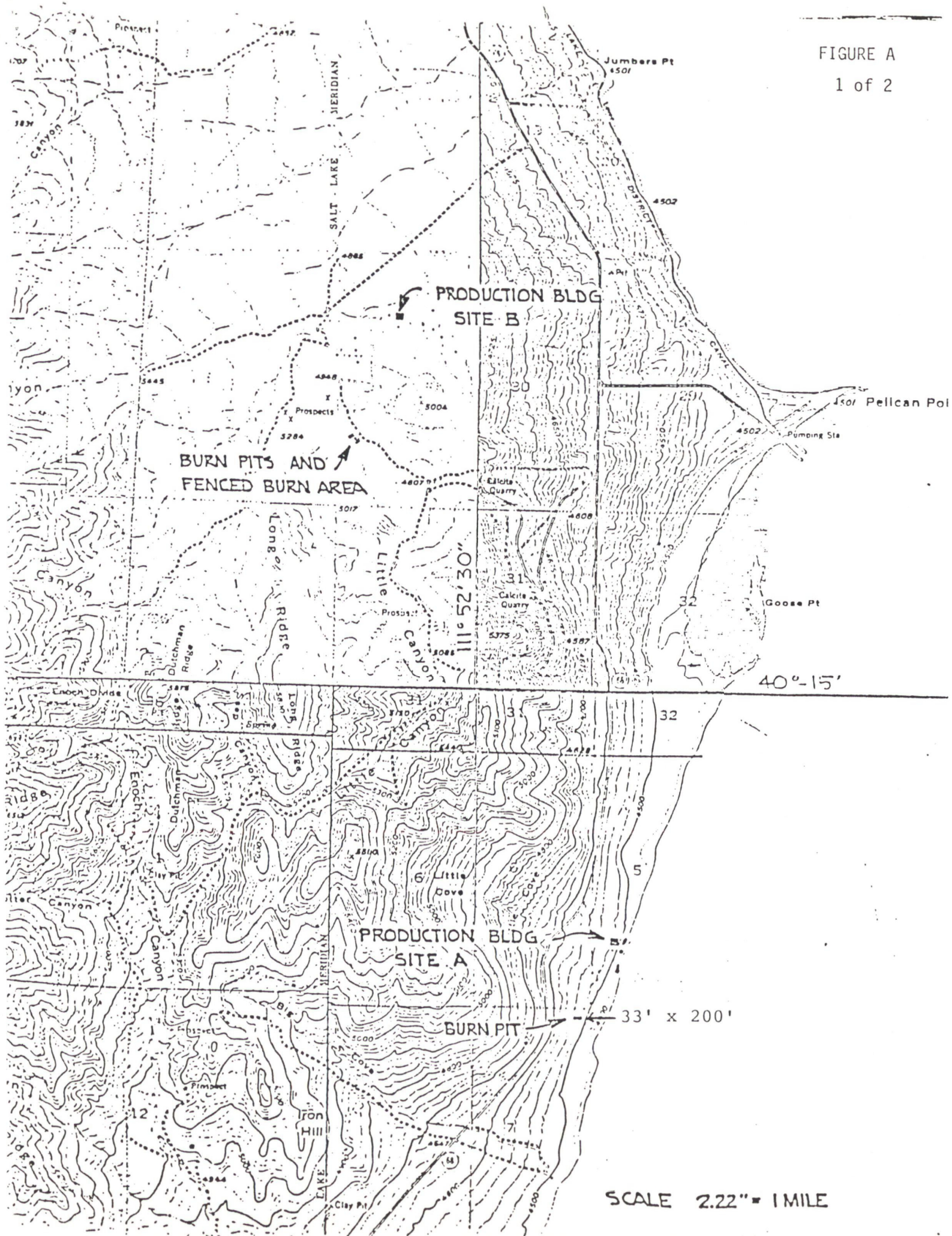
8.0 Milestone Dates for Closure.

- | | | |
|-----|--|--------------------------------------|
| 8.1 | Inspect and sample burning grounds | - Two months after approval of plan |
| 8.2 | Test samples for reactivity, RDX, TNT and PETN | - Two months after approval of plan |
| 8.3 | Reburning, resampling and retesting (if hazardous residues are found, 5.2.2) | - Four months after approval of plan |

8.4 Complete closure, including certification by owner, operator, by owner, operator, and an independent professional engineer that the facility has been closed in accordance with the approved Closure Plan.

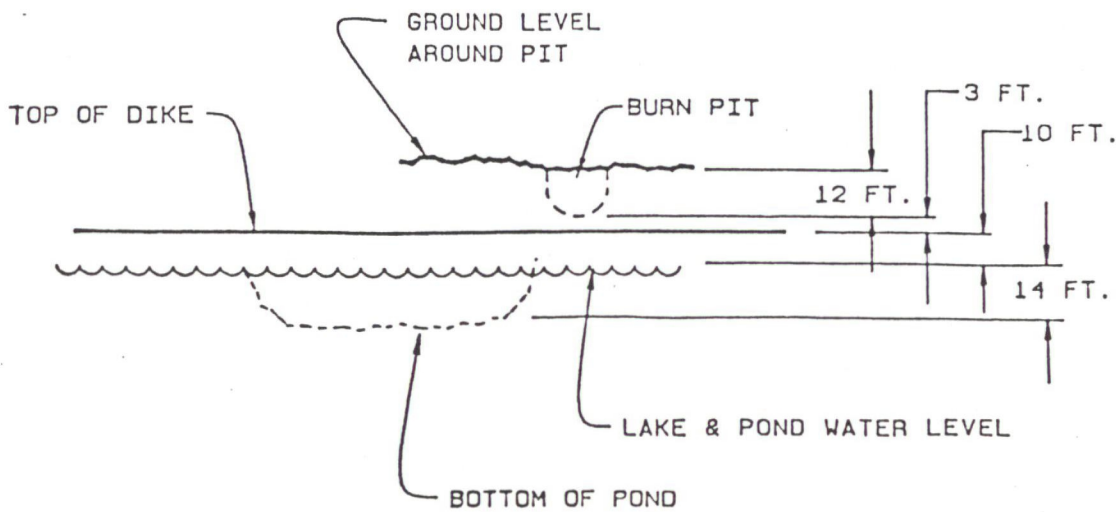
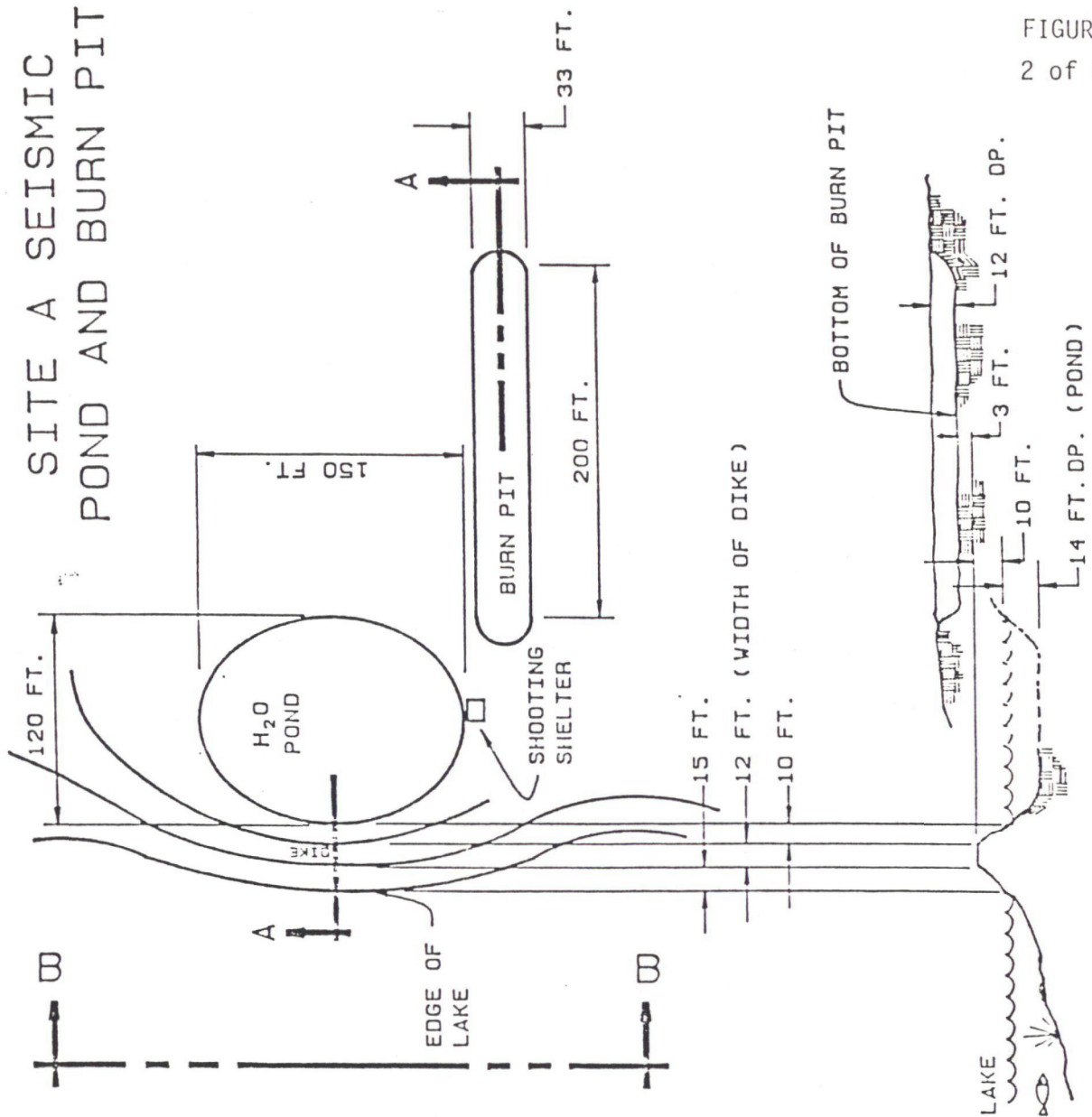
- 180 days after approval of plan

1 of 2



SITE A SEISMIC POND AND BURN PIT

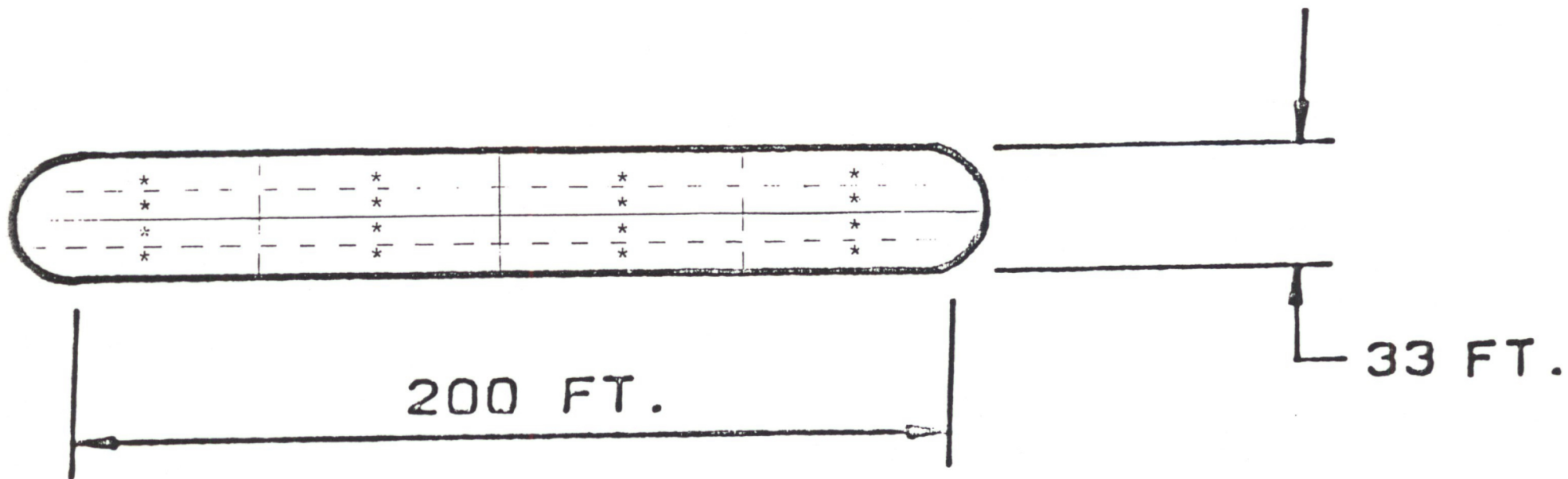
FIGURE A
2 of 2



VIEW 'B-B'.

SECTION 'A-A'

BURN PIT SAMPLE LOCATION



* Sample Location

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LEHI PLANT, SITE A

Sample Chain of CustodySample Section

Sample I.D. Number: _____

Sample Collected by: _____ Title: _____

Sample Collection Date: _____ Time: _____

Sample Description: _____

Sample Location: _____

Analysis Required: _____

Sample Delivered To: _____ Title: _____

Laboratory Section

Sample Received By: _____ Title: _____

Date: _____ Time: _____

Sample Air-Dry Start: _____ Finished: _____

Sample Delivered To: _____ Title: _____

Date: _____ Time: _____

Test Section

Sample Received By: _____ Title: _____

Date: _____ Time: _____

Sample Tested By: _____ Title: _____

Date: _____ Time: _____

Test Results: _____